DOCUMENT RESUME

ED 287 415 HE 020 833

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TITLE Application of Learning Style Theory to Nursing Education and Nursing Practice.
PUB DATE 87
NOTE 22p.
PUB TYPE Information Analyses (070) -- Viewpoints (120)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Cognitive Style; Higher Education; *Learning Processes; *Learning Theories; *Nursing; *Nursing Education; *Student Attitudes

ABSTRACT

A structure is proposed by which nurse educators may unravel the contradictions in learning style research and see more clearly the importance of learning style theory and its applications to nursing education and nursing practice. The application of learning style theory most evident in the nursing literature appears to encompass four major dimensions: (1) learner preference, (2) learner response style, (3) information processing, and (4) cognitive style. Utilizing these theoretical notions in educational settings has been shown to lead to greater achievement of educational goals. It has also been demonstrated to have a significant impact on the attainment of professional outcomes in practice settings including the field of nursing. However, many nurse educators note major contradictions in the learning style research disseminated in professional journals and question its validity for nursing practice. This confusion appears to have resulted from the failure of nurse educators and nurse researchers to recognize the multidimensional nature of learning style research and the conceptual framework from which each dimension evolves. It is proposed that research is needed to examine the degree of redundancy between conceptual dimensions defined within various learning style models. (SW)

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APPLICATION OF LEARNING STYLE THEORY TO NURSING EDUCATION AND NURSING PRACTICE

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Abstract

Learning style theory has been heralded as useful in planning instructional experiences for diverse populations of students. Currently nurse educators are using learning style theory (1) as a framework for identifying needs of students prior to entry into professional educational programs, and (2) as a means of identifying alternative methods of instruction for meeting the educational needs of diverse populations of professional nursing students.

However, many nurse educators note major contradictions in the learning style research disseminated in professional journals, and therefore question its validity for nursing practice. This confusion appears to have resulted from the failure of nurse educators and nurse researchers alike to recognize the multidimensional nature of learning style research and the conceptual framework from which each dimension evolves.

This theoretical paper proposes a structure by which nurse educators may unravel the tangled web of learning style research as applied to nursing education and nursing practice. Considering the proposed structure and following a review of learning style literature, one may better recognize the significant impact of learning style theory and its application to nursing practice.

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Application of Learning Style Theory to Nursing Education and Nursing Practice: Examination of Three Theoretical Models

Learning Style Theory: A Theoretical Notion

As a result of previous research efforts in nursing which apply learning style theoretical notions to nursing practice and nursing education, learning style theory is attaining heightened attention. It has been suggested that strengthening educational experiences utilizing inferences from learning style theory ultimately lead to greater achievement of educational goals of students in practice oriented disciplines such as nursing.

Learning style, in its most generic sense, has been described as an attribute, characteristic or quality within an individual that interacts with instructional circumstances in such a way as to produce differential learning achievement. Learning style theorists have suggested that evaluations of learning style are useful for (1) describing individual variations in modes of perceiving, remembering, and thinking, (2) distinguishing the multiple ways individuals may apprehend, store, transform and utilize information, (3) categorizing learners in terms of educational conditions under which they are most likely to learn, and (4) defining and predicting the amount of structure students will ultimately require for learning to occur (Hunt, 1979; Payton, Heuter and McDonald, 1979).

Disscussions of learning styles encompass a diverse array of theoretical and conceptual frameworks relating sensory partiality, cognitive processes, perceptual preferences and differential learning environments, and information processing strategies to academic achievement. It has been suggested that most of these singular notions have profound implications for educational planning. However, as one considers learning style as a "whole" it is noted that under the nrubric of learning styles, there is much confusion regarding its definition, its dimensions, and conceptual characteristics. As a result, it has been stated by many that until the conceptual confusion is corrected, the theoretical applications and academic significance to professional disciplines, including nursing, may never have significant practical application.

Learning Style Theory: Theoretical Models

In an attempt to alleviate some of the confusion and describe the dimensions of learning style, Partridge (1983), Curry (1983), Claxton and Ralston (1978) reviewed many of the research studies on this amorphous topic. As a result of these research efforts two alternative means for conceptually organizing the dimensions of learning style theory were proposed. One involved the conceptualization of learning style theory as a three-dimesional non-overlapping structure of learning theories, and the other a three-dimensional interfacing structure of the theoretical notions.

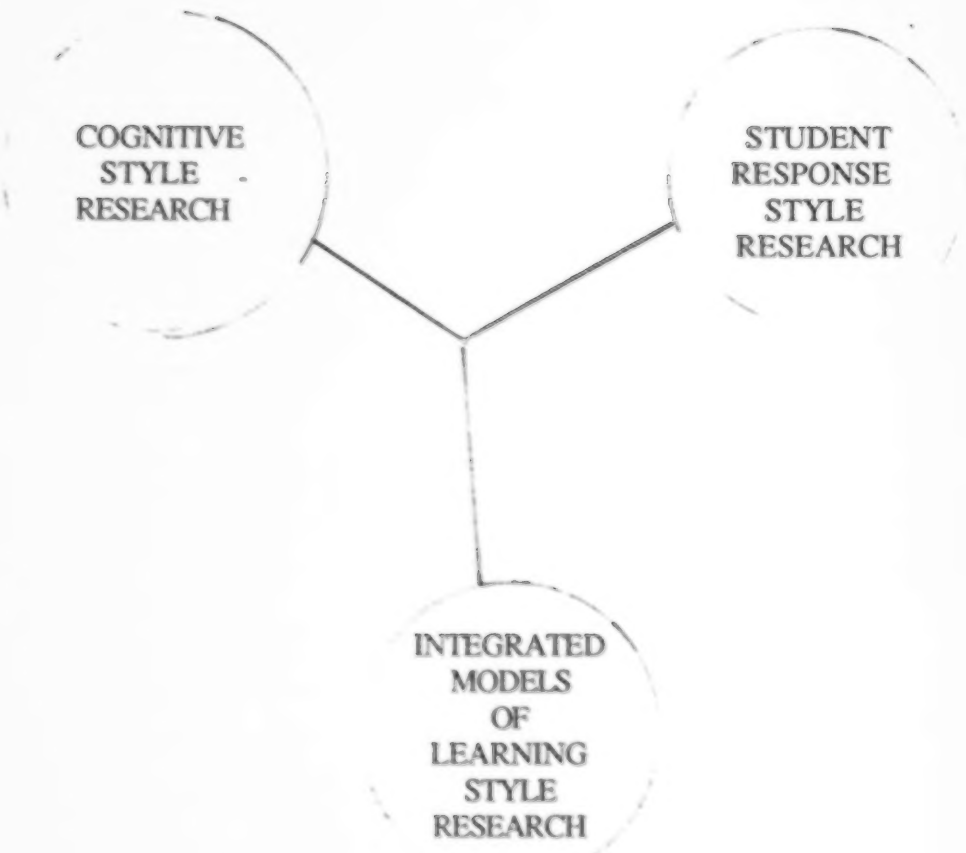
As a result of a critical review of learning style research, Partridge (1983), Claxton and Ralston (1978) reiterated the conceptual complexity inherent in the literature. It was suggested that the organizing framework for discussions of learning styles and learning style research should incorporate three basic categories: (1) research which focuses on observing how individuals perceive and respond to stimuli in their environments, referred to as cognitive style research; (2) research which describes how individuals behave, interact and respond in instructional settings, termed student response style; and (3) integrated models of learning style research which were derived from a theoretically eclectic approach incorporating learning theory, individual development research and personality type studies (Refer to Figure 1).

After carefully considering the conceptual framework, proposed by Partridge, Claxton and Ralston it might be assumed that the structure provides clear lines of demarcation between the dimensions of learning styles theory. However, these authors continually reiterate that while there appears great diversity among these categories, there are some interesting yet unresolved similarities between and/or within the learning styles dimensions.

Following an analysis of a similar body of research, Curry (1983) reported that it appeared reasonable to recommend the categorization of learning theories into three interfacing strata: the innermost strata including research related to an individuals' approach to adapting and assimilating information, referred to as cognitive personality style; the second incorporating research related to the individuals' intellectual approach to assimilating information following an information processing model; and the outermost layer including research related to preference or choice of learning environment which is referred to as instructional preference (Refer to Figure 2).

Curry, like Partridge and Claxton and Ralston, noted that there was a great deal of similarity and

FIGURE 1



LEARNING STYLE RESEARCH
CONCEPTUAL MODEL
(PARTRIDGE - 1983; CLAYTON and RALSTON - 1978)

LEARNING STYLE THEORIES

confusion in the terminology, conceptual dimensions and the behavioral foci representing learning styles in the literature. However, within the proposed organizational model it was noted that there appeared a fortuitous structure which more appropriately described the relationship between the dimensions of learning style (Curry,1983). This model emphasized the notion that all learning behaviors are fundamentally controlled by central cognitive domains and translated into purposeful behaviors via informational procesing channels where they formally and finally interact with instructional environmental factors.

Learning Style Theory: Application to Nursing Practice

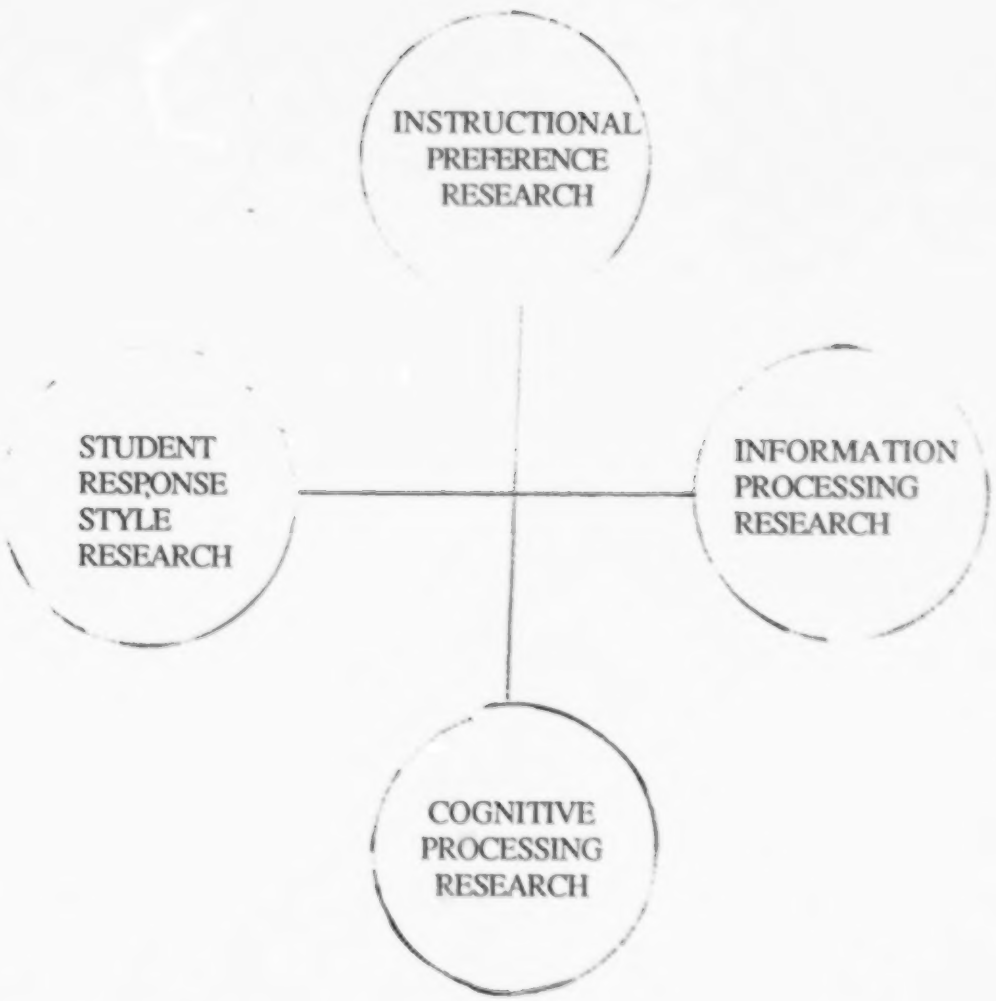
Research on learning styles in nursing and health related disciplines has been sparse, and limited in its generalizability. Nevertheless learning style is perceived as a critical factor affecting learning and is considered to have profound implications for planning professional education, measuring educational outcomes and anticipating an individuals' ability to fulfill professional role functions.

A review of the literature on the application of learning style theory in nursing education and nursing practice suggests that the theoretical dimensions of learning style most salient in nursing could be organized in a fashion similar to the Claxton, Ralston, Partridge and Curry models. Nursing research relating learning style to the various aspects of professional nursing practice, may be organized into four primary dimensions: (1) research which relates to the "likes" and "dislikes" that professional nurses or student nurses have for particular sensory modes and conditions of learning including preferences for certain teaching/learning strategies, referred to as learning (or instructional preference); (2) research which focuses specifically on how professional nursing students behave, interact and respond in classroom situations, referred to as student response style; (3) research which defines or describes the perceptual and intellectual activities involved as one responds to and uses stimuli in the context of learning, referred to as cognitive processing research; and (4) the research that attempts to describe an individuals' intellectual approach to acquiring, internalizing and transforming stimuli from the environment into some meaningful and purposeful action--or information processing research (Refer to Figure 3).

Instructional Preference

Most of the learning style research within nursing

FIGURE 3



LEARNING STYLE THEORY :
APPLICATION TO NURSING PRACTICE

deals with learning (or instructional) preference. These studies discuss the effects that learner preference or choice of learning environment have on academic achievement, learner attitudes and teacher expectations. In 1974, Canfield and Lafferty attempted to identify and compare learning style preferences of students in pre-vocational and pre-professional programs including criminal justice, education, physical therapy, organizational administration and nursing (Payton, et. al., 1974). They observed significant differences in learning preferences between these groups. Of all the groups examined, the physical therapy and nursing student groups expressed a significantly stronger need and/or preference for teacher structured organization and direct instructional experiences.

Ostmoe, Van Hoozer, Scheffel and Crowell attempted to gather additional data relating learning style preference and selection of learning strategies in nursing populations (Ostmoe, Van Hoozer, Scheffel & Crowell, 1984). Following the development of a learning style preference questionnaire designed to elicit information on students attitudes towards 28 different learning strategies, attempts were made to differentiate the instructional preferences of selected groups of nursing students. The findings indicated that preference for learning methods did exist among the selected sample of nursing students. In addition the findings revealed that the baccalaureate nursing students tested preferred learning strategies that were traditional and structured in nature. Participant responses emphasized their preference for (1) teacher-direction, (2) student passivity, and (3) highly organized and structured learning environments.

Rather than limit their research to the identification of group learning style preferences, Ostmoe, Van Hoozer, Schefffel and Crowell, also sought to determine if there were differences between the various levels of students within the baccalaureate curriculum. When comparing responses between lower division and upper division nursing students to questions focused on preference for teaching learning strategies, the results suggested that students in upper division nursing courses preferred the inclusion of non-traditional or innovative learning strategies- such as clinical practicum experiences and diverse independent learning activities. In contrast, beginning students appeared to prefer a greater variety of teacher-directed and didactically structured learning experiences.

It was apparent from these studies that preferences for particular learning strategies and learning experiences were observable in populations of nursing students. However, the predicted relationship between these learning style preferences and academic achievement in nursing remained unclear. Some nursing

researchers then suggested that in an attempt to enhance learner achievement there might be some value in structuring learning environments according to student learning style preferences. Others queried if exposing students to a variety of learning strategies in order to promote the development of greater flexibility in learning and problem solving and decision making was more appropriate.

Given these issues, authors have sought to determine if various modes of matching the learning style preference of students contributed to academic success. Lange's 1972 dissertation examined the effects of matching the learning styles of students and instructors in nursing education and reported that when teachers and students were matched according to learning style, the failure withdrawal rate in specific nursing courses was less among the matched than the non-matched students (Lange, 1972). The data presented by Smith and Fraizer lead them to suggest that learning style achievement could be enhanced when instructional methods were directly compatible with student learning style preference (Smith, 1974; Fraizer, 1982). Pascal, likewise, found that students who were taught according to their preferred learning style had more favorable attitudes towards the subject matter in particular, and schooling in general; and as a result, were significantly more successful in the fulfillment of stated course objectives (Cronbach and Snow, 1977).

Following the examination of 1,009 health science students, Payton, Hueter and McDonald found that anxiety levels were significantly higher when students received instruction through least preferred learning modes, or modes that were contrary to their expressed learning style (Payton, et. al., 1979). This increased anxiety was expected to lead to decreased achievement of educational goals.

McCarthy's report on the identification of learning style preferences of students and matching them with teaching formats, revealed that the "matched" students progressed in cognitive variables significantly better than the "non-matched" or neutral students. In addition it was observed that affective variables were not affected by either matching strategy (McCarthy,1979). Following a six year analysis of learning styles and academic performance of a select group of students, McCarthy concluded by stating that if students' learning style preferences can be identified and matched to special teaching formats an important tool for individualization of curricula would seem appropriate.

In response to recommendations by earlier authors and researchers, Partridge (1983) suggested that the wisdom of matching nursing student's styles with a congruent instructional mode seemed obvious. It was reported that students will likely be more comfortable

with educational interactions most consistent with their own and will probably learn more efficiently. However, Partridge asserts the indiscriminate use of such strategies to enhance achievement in nursing (or elsewhere) may not be quite this simple. It was suggested that the fallacy is that if a student habitually utilizes only one learning style, he or she may be at a serious disadvantage when confronted with the necessity to utilize a different mode.

The report by Claxton and Ralston (1978) suggest that before attempting to answer the question whether it is best to match students learning style preference with instructional modes, the purpose of the educational endeavor must first be identified. It was suggested that educators first consider whether the purpose of the educational activity is instrumental (i.e. only to learn the subject matter or task) or essentially developmental (i.e. to broaden the student's learning potential). An earlier report conducted by Altemeyer (1966) adds to this controversy and suggests that accentuating one kind of learning style can actually decrease an individuals' skill in another.

The studies on instructional preference emphasize the impact that features of the learning environment have on the achievement of learning outcomes. However, while the effect of structuring learning environments according to student preference is described as "obvious" the wisdom of doing so in nursing education is still at question.

Learner Response Style

There have also been demonstrations of learner response style in nursing settings. Learner response style has been defined as the manner in which an individual behaves, reacts and/or responds in an instructional setting. Learner response style is most commonly assessed as the learner "actively" or "passively" engages in instructional activities.

Ferrell (1978), completed an investigation of the learning style dimensions of adult learners returning to school to earn an Associate Degree in nursing. It was reported that fulfilling educational objectives in nursing requires students of nursing to demonstrate a certain degree of flexibility and independence in responding to the demands of the health care environment and the objectives of the learning occasion. Using the Autonomous Learner Index, a tool designed to obtain information as to how independent or dependent an individual is in attitude and response to learning and the learning environment, Ferrell (1976) hypothesized that evaluations of learner independence versus dependence could be implemented to identify learners who may have difficulty interacting in and responding in

clinical decision making situations. Such data, Ferrell concluded, could then be utilized to structure educational experiences according to the students' learning response style and the clinical instructional demands.

Messoff observed that evaluations of learner response style could also be useful for practice disciplines such as nursing (Messoff,1979). It was remarked that the assumption of various leadership functions is critical to any professional role. Within nursing practice was a vital leadership component which is necessary for the management of patient populations, student populations or populations of professional nurses. Following the completion of a literature review focused on reports of learner response style and learner behavior, Messoff suggested a practical application of learner response style to professional role behaviors. Messoff proposed that learners whose response styles reflected "independence", would favor active participant roles, and the assumption of major leadership functions. "Dependent" learners, conversely, would be more apt to assume spectator roles in the learning process and likewise would be expected to fulfill the less demanding group maintenance functions when assuming professional roles.

Following a through examination of the learning style research literature, Claxton and Ralston also assessed the effect of learner response style on academic achievement (Claxton and Ralston, 1978). They report evidence suggesting that students with "dependent" learner response styles would demonstrate greater academic success if during the teaching occasions they are provided reinforcement using verbal and non-verbal feedback. In addition, learners with "dependent" learner response styles were anticipated to achieve greater academic success if taught in environments reflecting social approval, warmth expressed by others and acceptance of the group. Independent learners, on the other hand, were less influenced by feedback such as grades and evaluations, and appeared most motivated and successful when placed in challenging group situations.

Learner response style studies have focused primarily on identifying the response styles of professional nursing students. There has been no attempt to classify any dimension as superior to the other. It was suggested by Garity (1985), in remarks focused on utilizing learning style as a basis for implementing creative teaching and learning strategies, that by evaluating this particular learning style dimension in populations of nursing students, educators could more appropriately structure group learning activities most consistent with students' response style mode. Such data were also described as useful for career guidance in

nursing. Garity's report implies that these measures may be useful for students making career choices and in selecting a professional role.

Information Processing

Another learning style approach that has been a focal point for nursing research is that of information processing. Information processing learning style has been defined as an individuals' intellectual approach to acquiring, internalizing and transforming knowledge from one's environment into some meaningful and purposeful action. Many of the discussions relating to information processing learning styles have included the theoretical notions of experiential learning discussed by Kolb (1976). While describing learning as a cyclic process, Kolb suggests that the acquisition of knowledge includes four stages: (1) engagement in a concrete experience, (2) observation and reflection on the experience, (3) abstraction, conceptualization and generalization of the experience, and finally, (4) testing of the newly conceived generalizations in new situations. If translated to a clinical nursing situation, this learning style process would be described as the means one uses to efficiently gather data from a clinical situation and to make a clinical decision or nursing judgement that will result in the implementation of an appropriate nursing action.

While considering the impact that information processing learning styles have in nursing education, Lasson (1984) evaluated information processing learning style differences between generic and registered nurse students in a baccalaureate nursing curriculum. The reported findings indicated that generic and registered nurse student groups were grossly similar in information processing learning style. However, the data analysis also revealed that the groups even more closely resembled each other as they matriculated from lower to upper division coursework.

Other authors noted the impact that knowledge of one's information processing style had on academic achievement. Skipworth (1976) addressed this issue by examining the relationship between learning styles and learning outcomes in the health related discipline of nursing. Utilizing a longitudinal research design, it was reported that nursing students with access to data related to their information processing learning style, when compared to students without such data (1) experienced significantly more success in their coursework, (2) were more efficient partners in the teaching learning process, and (3) assumed more responsibility for the manipulation of learning activities according to their specific learning needs. Ogden (1978) when examining a comparable group of

nursing students reported that those who were provided feedback related to their information processing learning style were more successful in the completion of assigned tasks. When given data related to their information processing learning styles, noting areas of strength and weakness in acquiring and transforming information, Ogden found that the informed group was reported to manipulate their learning activities independently according to their "supposed" strengths and subsequently achieve greater academic success.

If the information processing learning style did not involve environmental variables, it may logically be considered a more stable learning style when compared to learner preference and learner response style. Given its apparent relationship to processes of problem solving, information processing is also assumed to have a significant effect on the achievement of learning outcomes. Nursing practice is founded on the theoretical notions related to nursing process, the mechanism utilized by nurses to process information for the purpose of making critical patient care decisions. However, researchers have not yet attempted to determine the relationships that may exist between the two.

Cognitive Processing

Another learning style approach, cognitive processing, has gained much interest in nursing. Cognitive style research in nursing has focused primarily on the cognitive processing learning style described by Witkin (1977). Cognitive style, as described by Witkin, is a bipolar continuum which indicates the extent to which a person perceives part of a field as discrete from the surrounding field as a whole, (i.e. field independence); or the extent to which the organization of the prevailing field determines perception of its components (i.e. field dependence).

As a result of Witkin's work, nurse educators and researchers have recommended various teaching and learning strategies that complement the two diverse cognitive processing styles of learners. Miller (1979) analyzed cognitive styles and instructional preferences in a sample of community college students. Miller reported that field-dependent students preferred instruction via group discussion and field-independent students preferred teacher directed lectures. Cognitive processing styles were also observed by Martens to be affected by curricula and professional programs (Martens, 1976). Following an analysis of cognitive processing styles of learners in select educational sequences and professional programs Martens reported that field dependence was the overwhelming cognitive mode of students in courses and major that emphasized

interpersonal skills, groupwork and individual attention, such as nursing.

Cognitive styles of students were also noted by Gariety to influence how students learn (Gariety, 1985). Garity remarked that field-dependent individuals learned best when (1) material was organized, (2) when learners were given salient cues, and (3) when learners were allowed to rely on the characteristics of the learning task itself in directing the learning activity. Field-independent students were observed to learn most efficiently and effectively by (1) organizing their own materials, (2) relying on intrinsic motivation (rather than external sources) and by (3) setting up their own rules for testing concepts, opinions and ideas.

Unlike student preference and student response style, the cognitive processing characteristics of an individual learner are described as being unaffected by the learning environment. They are described as permanent structures which are stable attributes of the learners' personality. As a result, little change can be expected in the learner himself as environmental factors are manipulated. However, much greater change in educational outcomes occurs when this learning style characteristic is taken into account in the selection of teaching and learning strategies.

Summary and Recommendations for Future Research

The application of learning style theory most evident in the nursing literature appears to encompass four major dimensions: 1) learner preference, 2) learner response style, 3) information processing, and 4) cognitive style. Utilizing these theoretical notions in educational settings has been shown to lead to greater achievement of educational goals. It has also been demonstrated to have a significant impact on attainment of professional outcomes in practice settings including nursing.

Nevertheless, questions related to the structure of the theoretical model itself appear to be yet unresolved. There is no clear cut evidence to support either the interfacing or the unidimensional model. Until research is implemented which focuses on examining the degree of redundancy (or lack of redundancy) between the conceptual dimensions defined within the various learning style models is addressed, the questions will remain unanswered.

However, as nurse educators consider each model, and the dimensions they attempt to describe, greater understanding of the conceptual dimensions of learning style will undoubtedly occur. As a result greater application of the research findings and reduced confusion is anticipated.

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